

Gallatin Water Resources Task Force Final Report

Prepared

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By

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Gallatin Water Resources Task Force

For

Gallatin County Commission



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Cover Photo: Oblique aerial view of the lower West Gallatin River southwest of Belgrade. The view is towards the north, with Amsterdam Road running east-west along the bottom of the photograph. Photograph courtesy of Alan English, July 2004.

1.0 INTRODUCTION

1.1. Purpose

With continuing growth and changing land uses in Gallatin County, the Gallatin County Commission is faced with making decisions on a weekly basis that have the potential to impact the County's water resources (rivers, streams, lakes, ponds, wetlands, and ground water). Water resource issues are included in almost all of the proposed developments that the Commissioners review. Ensuring the County's economic well being and protecting water resources simultaneously is no simple task. Gallatin County is one of the fastest growing counties in Montana. Between 1990 and 2000 the county population increased by over 18,000, and is projected to reach over 112,000 by the year 2025 (Woods & Poole, 2002). Recent controversies over subdivisions and water use exemplify the complexities involved. The Gallatin County Commission is often caught between competing, and equally legitimate interests. They are often faced with making their decisions with limited technical background, usually after listening to expert and public testimony from opposing interests.

The Gallatin Water Resources Task Force was formed at the request of the County Commission in December 2003 to identify strategies for improving the water resource decision-making process. The Gallatin Local Water Quality District facilitated the Task Force meetings. The Task Force met eleven times between December 2003 and June 2004. This report summarizes the activities of the Task Force and their recommendations.

1.2 Task Force Mission

To objectively identify, summarize, and prioritize water resource issues within Gallatin County for the benefit of the Gallatin County Commission and the public. The Task Force will make recommendations to the Commission regarding changes in review processes, changes in regulations, needs for additional information, and ways to better educate and involve the public in the water resource decision process.

1.3 Task Force Membership

Task Force members were selected to represent a broad spectrum of water resource professionals, water users, and regulatory agencies involved with management of water resources. The following individuals served on the Task Force:

Alan Armstrong, GIS Coordinator, Gallatin County GIS Department
Tammy Crone, Water Quality Specialist, Gallatin Local Water Quality District
Dr. Steve Custer, Professor, Montana State University Earth Sciences Department
Victoria Drummond, Planner, Gallatin County Planning Department
Alan English, Manager, Gallatin Local Water Quality District.
Scott Gillilan, Consulting Hydrologist, Gillilan and Associates
Mark Haggerty, Program Director, Greater Yellowstone Coalition
Russell Levens, Hydrogeologist, Montana Department of Natural Resources and Conservation
Dr. Bryan McGlynn, Professor, Montana State University Land Resources Department
Denise Moldroski, Env./Public Health Specialist, Gallatin County Env. Health Services
Sean O'Callaghan, Planner, Gallatin County Planning Department
Dave Pruitt, Chief Water Commissioner, West Gallatin River Water Commissioner
Walt Sales, Rancher, Farmer, Irrigator, Landowner, Sales Ranch
Nick Schutter, Farmer, Irrigator, Landowner, Schutter Farms
Richard Smith, Developer, Landowner, Gallatin County Planning Board Member, SWMBA
John Vincent, Commissioner, Gallatin County Commission

2.0 THE APPROACH

At the first Task Force meeting each participant was asked to provide their perspective on local water resource issues and problems. From this meeting an Issues and Needs Survey was drafted and each Task Force member was asked to complete the survey. The results of the survey were used to identify specific water resource issues for discussion by the Task Force, and identify needs for better water resource information (data).

2.1 Water Resource Issues

The Task Force identified twenty-two water resource issues for discussion. These issues were organized into the following five categories in this report:

- I. Issues Associated with Low-Yield Wells
- II. Issues Associated with High-Yield Wells
- III. Issues Associated with Ground Water/Surface Water Interactions
- IV. Issues Associated with Floodplains
- V. Issues Associated with Irrigation Ditches

For each of the issues discussed by the Task Force, a format was followed where by the wording of the issue was agreed upon, potential solutions were proposed by Task Force members, and the pros and cons of each potential solution were discussed. Task Force members agreed that any solution offered by a member would be considered and captured in the final report. In other words, all ideas were considered. It was also agreed that the Task Force would include all of the proposed potential solutions in the final report without endorsing specific ones. **In other words, potential solutions do not represent consensus recommendations to the Commission.**

The Task Force did not have the opportunity to address every issue identified due to both the time the Task Force had to complete its work, and the complexity of some of the issues. For example, the “Carrying Capacity” of water resources to handle increased growth and development was discussed as an important issue. While the Task Force discussed “Carrying Capacity,” it did not make specific recommendations due to the complexity of the issue and the limited time the Task Force had to discuss issues. Most of the potential solutions fell into one of the following six general categories:

- I. State legislative reforms
- II. State administrative rules reforms
- III. County regulatory or policy reforms
- IV. Voluntary actions
- V. Education
- VI. Research or data needs

Every proposed solution represents some commitment of time and resources if implemented. Each type of solution carries a set of pros and cons. For example, proposed changes in State law have a different set of challenges than simply proposing voluntary actions to solve any particular issue. As you read through the proposed potential solutions you will see patterns among the pros and cons. For example most solutions include a con that states it will require time and resources (money) to implement. An assumed pro for many of the solutions is that it would help solve the problem. The issues are presented in sections 3 through 7 of this report.

2.2 Data Needs

To make informed decisions about water resource issues, the Task Force determined that better data on water resources are needed. The Task Force discussed the data that is already available and additional data that would help reduce conflicts and resolve water resource issues. The data needs generally fell into one of the following three categories:

1. Improved management of existing data
2. Improved monitoring of water resources
3. Research needs to better understand water resources.

The Task Force prioritized data needs based on the results of the Issues and Needs Survey. They were discussed throughout the following meetings, with some additional data needs being identified. The data needs identified by the Task Force are presented in section 8 of this report.

3.0 ISSUES ASSOCIATED WITH LOW-YIELD WELLS

3.1 General Background Information

Low-yield wells as discussed by the Task Force are wells that withdraw ground water at a rate equal to or less than 35 gallons per minute (gpm), and not exceeding 10 acre-feet/year. 10 acre- feet/year equals 3.26 million gallons/year or 6.2 gpm, 24 hours a day, 7 days a week.

Low-yield wells are also commonly referred to as private or domestic wells. They typically serve individual households or small businesses. The Montana Department of Natural Resources and Conservation (DNRC) is charged with regulation of the drilling of wells and appropriation of ground water (obtaining water rights). DNRC regulates the actual drilling and construction of wells through the Montana Board of Water Well Contractors. This Board requires that all well drillers in the State be licensed. The Board of Water Well Contractors rules are published in Title 36, Chapter 21 of the Administrative Rules of Montana. More information on DNRC, water rights, and regulation of low-yield wells can be found on the Internet at www.dnrc.state.mt.us/wrd/home.htm.

People that drill and develop a low-yield well to appropriate ground water at a pumping rate of 35gpm or less, not exceeding 10 acre-feet/year, are required to file a Notice of Completion of Ground Water Development with DNRC within 60 days after putting the water to beneficial use. A permit is not required from DNRC prior to drilling the well unless the proposed well is located within a Controlled Ground Water Area designated by DNRC. **When any well is drilled, the well driller is required to file a Montana Well Log Report with the Montana Bureau of Mines and Geology. It is up to the well owner to file the Notice of Completion of Ground Water Development form with DNRC to obtain a water right.** This is an important distinction, as many well owners are under the false assumption that the driller or someone else filed all the necessary “papers” for their well.

As of May 2005, there are currently more than 13,100 well logs on file with the Montana Bureau of Mines and Geology for Gallatin County. These well logs can be viewed on the Internet at <http://mbmggwic.mtech.edu>. The majority of these wells fall into the category of low-yield wells. It is important to note that the well logs for many of these low-yield wells report yields, based on pumping tests that are higher than 35gpm.

The pumping rate shown on the well log is the driller's estimate of the maximum yield the well is capable of producing. This is different from the amount of water the well owner claims to put to beneficial use when filing a Notice of Completion of Ground Water Development (obtaining a water right). In most cases the actual amount of water pumped from these low-yield wells is much less than 35gpm. A typical household uses closer to 500 gallons/day for domestic purposes, excluding irrigation. This would represent an average continuous pumping rate of less than 1gpm. Water usage for irrigation is highly variable and poorly documented.

3.2 Impacts from Subdivisions with Individual Low-Yield Wells (Issue #1)

Issue Statement

There is limited analysis of the water resource impacts of subdivisions that are proposed with low-yield wells on each lot, as compared to subdivisions proposed with community water wells.

Issue Background

Recent examples of developments proposed with individual wells include the Antelope Ridge subdivision, which was approved by the County Commission, and the Arbor Mills subdivision, which was not approved. The Arbor Mills subdivision proposed filling a water-ski lake with water from multiple low-yield wells. Examples of existing subdivisions that have been approved with individual wells on each lot include Mountain View, Wheatland Hills, Clover Meadows, Gardener Park, Sourdough Creek, Hyalite Foothills, and Summer Ridge.

For a subdivision proposed with individual wells it is the responsibility of the individual lot owners to file a Notice of Completion of Ground Water Development with DNRC and obtain a water right. With few exceptions these wells are permitted and DNRC does not review the cumulative impacts of all of the wells in the subdivision on ground water resources and existing water rights in the area of the subdivision. For a subdivision proposed with community water supply wells it is the responsibility of the developer to obtain a water right from DNRC prior to putting the wells into service. The developer is usually required to drill test wells, conduct pumping tests, and provide information to DNRC to show that the proposed subdivision will not adversely affect existing ground-water rights.

The Montana Department of Environmental Quality (DEQ), in collaboration with the Gallatin County Environmental Health Services Division, reviews the water systems proposed for all subdivisions. However, this review is focused on the determining if ground water is physically present within the subdivision and the proposed infrastructure is adequate. **The DEQ generally does not review the potential impacts of a proposed subdivision on ground water resources if individual low-yield wells are proposed.**

Potential Solution 1-A: Pass a County Ordinance requiring proposed subdivisions with a specified number of lots and specified lot sizes to install a community water system.

Pros

- Community wells would trigger a more detailed analysis of potential impacts by DNRC.
- Relatively easy to implement, because it does not require a change in State statute.
- Community wells increase the ability to manage the water resources.
- Community wells provide a higher level of protection of public health.
- The County ordinance process would encourage public involvement in the solution.

Cons

- Community wells would increase the workload of the County, DNRC, and DEQ, since these agencies would have to review proposed water systems and enforce related regulations.
- The requirement would be an increase in regulations.
- The legal authority for the County to pass this kind of ordinance may not exist (note that Missoula County does have a similar ordinance). Legal research would be required to determine what authority may exist.
- The requirement would reduce flexibility for developers.
- In some areas the aquifer properties may preclude developing a well with enough capacity to serve multiple users. In these areas, properly spaced individual wells may be a better option.
- It may increase the cost of the lots for a proposed subdivision.
- Although DEQ regulates and oversees Public Water Supply systems (25 or more people or 15 or more service connections), smaller systems would not be regulated and the homeowners or other management may not properly run the system.

Potential Solution 1-B: Require evaluation of the water resource impacts of proposed subdivisions regardless of the number and size of wells proposed. Options would include changes in rules, regulations, or policies at the State level, the County level, or both.

Pros

- The requirement would trigger the more detailed review and analysis desired.
- Allows flexibility for Developers to choose the types of wells for their project.
- If done at the County level the time required to change the County rules or policies would be shorter than if changes in State statute were pursued.
- The requirement would provide uniformity in the review process.

Cons

- Changes in State statute, if needed, would take a significant amount of time and effort.
- There may be a lack of statewide support if viewed as only a high growth county issue.
- The action would require money and staff time to change rules and implement changes.

Potential Solution 1-C: The County could enter into a contract for third party review of proposed subdivisions on an as-needed basis (optional). The contract envisioned would include a pre-qualified pool of professionals that the Commission could consult with on an as-needed basis, to provide objective consideration of the facts related to the proposed subdivision as well as consider general public concerns.

Pros

- Would provide a local means for independent third party review.
- Would improve the ability for the Commissioners to review and understand unfamiliar, technical water resource issues they must consider.
- Would provide for flexibility, if only used when needed.
- The time required for the review would probably be short.

Cons

- Increased County costs, increased cost to tax payers for review.
- Would not have a consensus view such as would be obtained from getting an opinion from a technical advisory group.
- Individuals on the contract list may sometimes have conflict of interest.

Potential Solution 1-D: Form a permanent (standing) Water Resources Technical Advisory Committee or Board to review and comment on reports and other information related to a proposed subdivision (or other water issues). This Committee or Board is envisioned as a non-biased, independent, technical advisory group that the Commission could consult with on an as-needed basis.

Pros

- Would also provide a local means for independent third party review.
- Would improve the ability for the Commissioners to review and understand unfamiliar, technical water resource issues they must consider.
- Would provide for flexibility, if only used when needed.
- The time required for the review would probably be short.
- A technical advisory group would provide a broader perspective.
- Much less likely that a conflict of interest would bias the decision.
- The technical advisory group could also address other water resource issues.

Cons

- The time commitment required for committee/board members to serve as volunteers may make it hard to maintain consistency within the group.

Potential Solution 1-E: The County could hire staff with the expertise to provide technical advise to the Commission.

Pros

- Would also provide a local means for third party review.
- Would provide for flexibility for commissioners to use as needed.

Cons

- The recommendations and comments of the staff may not be viewed as independent.
- The person hired for the position would have a tough job (risky).
- Would require a staff increase for the County and more money.

Potential Solution 1-F: Create Controlled Ground Water Areas (CGWAs) through the existing DNRC petition process to assist specific areas that have water resource problems.

Pros

- They can initially be created as temporary CGWAs, allowing time to collect more information to determine if a permanent CGWA is warranted.
- They can be site specific in terms of conditions and limitations.
- Can be done using existing State laws.
- They can be used to regulate “hot spots” where there are problems and more intensive review is needed, and more immediate action is needed.

Cons

- They are area specific and can't be used to address concerns County-wide.
- There could be significant local opposition from existing landowner within the proposed CGWAs, including owners of undeveloped lots.
- Additional fees and paperwork would be required of property owners to obtain a permit to drill a well within a CGWA. A typical permit fee would be \$400.
- More CGWAs would increase DNRC workload.
- It may not be a very effective tool for dealing with this particular issue since the Commission is concerned with making the right decisions on subdivision applications before there is a problem.

3.3 Cumulative Impacts of Low-Yield Wells throughout Gallatin County (Issue #2)

Issue Statement

There is a lack of understanding of the cumulative impacts of all of the low-yield wells. How much water they really use and the impacts to the ground water levels have not been evaluated or documented. There is a public perception that the increased drilling of wells throughout the Gallatin Valley is lowering the water table.

Issue Background

The Task Force members discussed this issue and agreed that it deals with the broad concern with cumulative impacts and would be addressed later if time allowed. The Task Force did not propose any specific potential solutions to this problem.

The Task Force did discuss the perception that ground water levels are dropping valley-wide. With a few localized exceptions there is limited data available to support this perception. Areas such as the southwest flank of the Bridger Range, the northern flank of the Gallatin Range, and the Mountain View subdivision area all have documented problems and many homeowners have had to drill new wells or deepen their existing well. However, the cause(s) of these ground-water level declines have not been scientifically linked to over pumping of ground water. For example along the southwest flank of the Bridger Range (Sypes Canyon area) drought impacts may be the primary cause of declining ground-water levels, while in the Mountain View Subdivision area loss of artificial recharge from flood irrigation upgradient of the area due to commercial and residential development may be the primary cause. **Clearly more information is needed, but a review of water level trends in about 26 wells throughout the Gallatin Valley, that have long-term records suggests there is no downward trend valley-wide.**

3.4 Low-Yield Wells In Mixing Zones for Community Wastewater Systems (Issue #3)

Issue Statement

Small wells may be drilled in areas that are part of a mixing zone for a community wastewater system that crosses property boundaries. These mixing zones are approved by DEQ prior to the well being drilled, and typically without the adjoining property owner's knowledge.

Issue Background

The Montana Department of Environmental Quality (DEQ) issues Ground Water Discharge permits for public wastewater systems that are designed to treat 5,000 gallons per day or more. Associated with these permits, DEQ designates ground water mixing zones down gradient of the wastewater system. These mixing zones can extend across property boundaries. Adjoining property owners that are not aware of them may later install a well within the mixing zone. If the adjoining property owner is aware, they may find that their ability to develop ground water on their property has been pre-empted. This may result in the property owner not being able to sell or develop the lot. As an example, DEQ recently issued a ground water discharge permit and designated a mixing zone for a wastewater system in the Four Corners area. This mixing zone crosses property boundaries and impacts adjoining properties.

DEQ requires the engineers submitting the application for the Ground Water Discharge permit to provide a list of names of adjoining property owners, but DEQ does not notify the adjoining property owners. DEQ does do some public notice on the Web, and sometimes they post a notice in the local newspaper. **Related to this issue, there is no requirement to obtain a ground water discharge permit for a public wastewater system prior to obtaining approval for a subdivision, or a public water supply.**

The Task Force discussed the science of determining the actual size and location of ground-water mixing zones. There are a significant number of uncertainties and variables that affect the actual locations of mixing zones for septic systems. Local variability in aquifer properties, seasonal changes in the direction of ground water flow, complex biological processes, and complex chemical interactions all contribute to the difficulty in determining the size, shape, and location of the mixing zones. **The Task Force recommends extreme caution when considering information regarding the location of a mixing zone.** Task Force members agreed that while the current methods used to determine the size and locations of mixing zones may have numerous flaws and simplifying assumptions, they are reasonable.

Potential Solution 3-A: Require a mixing zone easement on adjoining properties.

Pros

- Would protect adjacent property owners from unwillingly losing the ability to develop their property by informing them of the designated mixing zone location.
- It is a relatively simple solution, and legally an easement could be created for just about any purpose if the property owner was willing.
- Property owners may be able to negotiate for compensation with the permit applicants in exchange for the impacts to their property.

Cons

- Legal research may be required to determine how this type of easement would be created.
- Creation of the easements may require changes in County or State regulations.
- It may be hard to determine where the mixing zone easement needs to be placed due to the difficulty of physically locating an actual contamination plume from a septic system, even with extensive hydrogeologic information.
- Seasonal changes in the local direction of ground water flow may cause the mixing zone to move around, adding to the difficulty of locating an easement.

Potential Solution 3-B: Prohibit the practice of allowing mixing zones for community wastewater systems to cross property boundaries.

Pros

- Adjoining property owners, attempting to develop ground-water resources would not be limited by an existing mixing zone.
- The potential for an adjoining property owner to inadvertently drill a well within an approved mixing zone would be greatly decreased.

Cons

- It may not always be feasible due to limited lot sizes or other lot constraints.
- Would probably require a change in State rules or laws.
- Local regulations prohibiting the practice may not be legally feasible.

Potential Solution 3-C: Define mixing zones based on projected nitrate levels rather than on a standard length.

Pros

- Under favorable aquifer conditions it could allow for shorter mixing zones that would not cross a property boundary.

Cons

- Under unfavorable aquifer conditions it could require much larger mixing zones than standard sizes used by DEQ would require.
- It could discourage installation of community wastewater systems in many cases because of the likelihood of increased mixing zone size.
- Requiring calculation of projected nitrate concentrations rather than using standard sizes could increase the cost of applying for a permit.

Potential Solution 3-D: Build and maintain a spatial (GIS) database with layers for locations of community wastewater systems, areas of mixing zones, and all wells. Make this database available to the public via the Internet.

Pros

- Would provide a means for spatially identifying mixing zones.
- Would make it easier for the public, developers, well drillers, and regulators to locate designated mixing zones.

Cons

- Increased staff time and cost to develop and maintain databases.
- Creating and maintaining a database of all wells is a large and expensive project.

Potential Solution 3-E: Improve the process for providing notification to potentially affected property owners when a mixing zone is proposed. One method would be to incorporate this requirement into the subdivision review process.

Pros

- There are lots of potential mechanisms to provide for the notification.
- Adjoining property owners would at least be informed of the mixing zones.
- There would be no significant increase in costs to the permit applicant.

Cons

- The notification language may be difficult for some property owners to understand.
- Regulatory changes would be required to make the notification requirement work.

3.5 Separation Between Low-Yield Wells and Septic Systems (Issue #4)

Issue Statement

There are problems with regulating the separation between small wells and septic systems. While there is an effective process to make sure that new septic systems are not permitted within 100 feet of an existing well, there is not an effective process for making sure that new wells are not drilled within 100 feet of an existing septic system.

Issue Background

There is concern with the separation between wells and septic systems. The primary concern addressed with this issue is the separation between low-yield wells and septic systems that do not require a ground water discharge permit (less than 5,000gpd). These smaller septic systems still require a permit issued by Environmental Health Services in Gallatin County. **The Task Force members agreed that existing County rules do a good job of assuring that a new septic system is not placed within 100-feet of an existing well, but wells may later be drilled near a permitted septic system.** The County has limited ability to monitor the locations of wells unless the wells are within an approved subdivision and the locations of both wells and septic systems are specified on the approved plat maps.

Potential Solution 4-A: Make septic system permits and subdivision plat maps available and viewable as PDF documents on the Web.

Pros

- Would make it easier for drillers, regulators, and the public to check for conflicts.
- It would improve public access to both septic system permits and plat maps.
- It would help protect the original documents since less public viewing of the hard copies would be required.

Cons

- The County would need to purchase computer software and hardware to allow for scanning, storing, and retrieving the documents.
- The databases and the Web site would require constant updating to be useful.
- Increased staff time would be required to maintain and update the databases.
- It would only be useful if the drillers and others checked the site before drilling.
- There would be a large initial investment in staff time and money to get the system up and running.

Potential Solution 4-B: Require a drilling permit be obtained prior to drilling a well. The assumption is that the permitting agency would check for mixing zones prior to issuing the permit.

Pros

- It would place a level of accountability on the regulatory agency and the drillers.
- It could help improve the accuracy of well and septic system locations.
- Each new well location would be checked to assure no septic systems are nearby.

Cons

- A new permitting process would need to be developed.
- The action would result in more regulations.
- Significant staff time and money would be required to implement the permitting.
- Would increase the cost to homeowners to drill a well due to the permit cost.
- It is unclear who the permitting agency should be.

3.6 Notice of Completion of Ground Water Development for Low-Yield Wells (Issue #5)

Issue Statement

Water rights have not been obtained for a significant number of the low-yield wells in Gallatin County.

Issue Background

The Montana Water Use Act of 1973 established a permit system for new uses. Any person planning a new or additional development for a beneficial use of water from surface water or ground water after June 30, 1973, is required to obtain a Permit to Appropriate Water or file a Notice of Completion of Groundwater Development to get a Certificate of Water Right. The Montana Department of Natural Resources and Conservation (DNRC) administers the requirements for notification and permitting. Beneficial uses of water include domestic, stock, irrigation, lawn and garden, mining, municipal, industrial, commercial, agricultural spraying, fisheries, wildlife, and recreation. Wells with an anticipated use of 35gpm or less, not to exceed 10 acre-feet per year, do not need to apply for a permit, unless the well is being drilled within a Controlled Ground Water Area, but do need to file the Notice of Completion.

Based on testimony provided to the Task Force from DNRC staff, it is possible that up to 50% of the owners of low-yield wells in Gallatin County have not filed the Notice of Completion of Ground Water Development, or properly transferred their water right during property transactions. Task Force members agreed that while this could be a major issue for a well owner, it is a minor issue in terms of water resources in Gallatin County. If a well owner has not filed on their well and a new user applies for a Permit to Appropriate significant quantities of water, the existing well owner has no standing to object to the proposed new water use. The Gallatin Local Water Quality District offered the following potential solution.

Potential Solution 5-A: Provide public education on the requirement to file a Notice of Ground Water Appropriation with the Bozeman DNRC office. An educational brochure is proposed that would be available on the District's website and distributed in hard copy.

Additional educational efforts may include discussing the requirement during presentations to homeowners on private wells, and newspaper articles or advertising.

Pros

- Easy to implement
- Would not require any changes in rules or regulations
- Well owners that file would have a documented ground water right
- Improved records of ground water right filings would improve the ability to determine how much ground water is being appropriated.
- The education would help well owners to comply with existing law

Cons

- Increased staff time and cost for the Gallatin Local Water Quality District.
- Increased workload for DNRC.
- There is a filing fee of \$50 to a well owner to file a Notice of Ground Water Appropriation.
- In a Controlled Ground Water area, wells drilled prior to establishment of the CGWA that were never filed on have to obtain a permit and pay significantly more than \$50.

4.0 ISSUES ASSOCIATED WITH HIGH-YIELD WELLS

4.1 General Background Information

High-yield wells as discussed by the Task Force are wells that withdraw ground water at a rate greater than 35gpm or 10 acre feet/year.

As with low-yield wells, the Montana Department of Natural Resources and Conservation (DNRC) is charged with regulation of the drilling of high-yield wells and the appropriation of ground water using high-yield wells. The actual drilling and construction of wells is still regulated by DNRC through the Montana Board of Water Well Contractors. This Board requires that all well drillers in the State be licensed. The Board of Water Well Contractors rules are published in Title 36, Chapter 21 of the Administrative Rules of Montana. More information on DNRC, water rights, and regulation of high-yield wells can be found on the Internet at www.dnrc.state.mt.us/wrd/home.htm.

Anyone anticipating to pump more than 35 gallons per minute or 10 acre-feet per year of ground water is required to apply to DNRC for a Permit to Appropriate Water before the water is put to beneficial use. Wells that fall into this category include most public water supply wells, irrigation wells, and industrial use wells. The well driller is required to file a Montana Well Log Report with the Montana Bureau of Mines and Geology for all wells drilled for the application, including monitoring wells that may be installed around a production well. DNRC typically requires that applicants conduct one or more pumping tests and provide supporting hydrogeologic information along with the permit application. Existing holders of a Certificate of Water Right within the area of the application are notified by DNRC of the application. Objections can be filed with DNRC, and a hearing is often held.

Because of the higher yield of these wells, there is often more concern from other water users with the potential impacts to water resources from development of the proposed new well(s). **The two most common concerns are: 1) impacts to existing wells if the proposed new well lowers the water table in an area, and 2) impacts to nearby surface water bodies if there is a hydrologic connection between the ground water and surface water.** Background information on issues associated with “ground water/surface water interaction” is provided in the next section of this report (section 5.0).

4.2 Objections from Existing Water-Right Holders to New Applications (Issue #6)

Issue Statement

Existing water-right holders must object each time a new application for a high-yield well is submitted. This requires a significant amount of time and money. DNRC may not hold a hearing or look as closely at the impacts from a large well if no one objects to the application.

Issue Background

This issue relates to potential conflicts between an applicant for a new ground-water use and existing users of both ground water and surface water. With increased growth in Gallatin County the number of new applications to appropriate ground water has increased dramatically. The holder of an existing Certificate of Water Right for beneficial use of ground water may find that they have to repeatedly try and protect their right by filing an objection each time a new application is filed for a Permit to Appropriate Water. It can easily cost up to \$20,000 to hire an attorney who can file the objection, and present testimony at a hearing to help try and protect a water right. If an existing holder of a Certificate of Water Right does not file an objection, they lose their right to testify at a hearing, if one is held.

While the objector(s) may hold a right to appropriate ground water, in many cases the objector(s) hold rights to appropriate surface water. **Increased recognition of the potential connections and interactions between ground-water resources and surface-water resources has lead many surface water users to object to new applications to appropriate ground water.** Recent examples include applications filed to appropriate ground water for the Day Ranch development, Zoot Enterprises development, and the Northstar Development.

Potential Solution 6-A: Form a West Gallatin Water Users Association.

Pros

- There is currently a high level of interest in formation of this association.
- As a group the water users will gain knowledge and expertise.
- Costs associated with objecting to water right applications can be spread among users.
- Formation of the association could provide a means for facilitating relationships and discussions on other issues.

Cons

- The association may have limited legal standing and may not be able to object to a water right application as an association since the association would not have a water right.
- It would not provide assistance to water users on other rivers or streams.
- Other non-irrigation water users would be left out.
- It does not solve the problem County-wide.

Potential Solution 6-B: Encourage formation of a watershed group to discuss and address a wide range of water issues.

Pros

- There is also currently a high level of interest in formation of watershed groups.
- It could provide a mechanism for coordination of groups interested in water issues within the watershed.
- Provides a forum for education and communication.
- The watershed group could include all water users and folks interested in issues.
- The watershed group could provide a mechanism for mediation.
- Developers could approach the group to learn about potential issues and concerns in the early stages of planning a development.

Cons

- There are a lot of conflicting interests that could bog down the efforts of the group.
- It requires intensive organization and administration, and usually a paid staff person.
- It could increase the burden on developers since they would have yet another group to address concerns with.
- The watershed group would have no grounds for collectively objecting to an application for a water right since the group probably would not hold a water right.

4.3 Water Right Applications and the Subdivision Review Process (Issue #7)

Issue Statement

Applications for water rights and the subdivision review process go on separately. A subdivision can receive preliminary plat approval prior to determining if a water supply is available.

Issue Background

This issue is very complex due to the number of rules and regulations that may come into play for a proposed subdivision. The Task Force discussed the situation where a proposed subdivision, that included a water supply that required a Permit to Appropriate Water from DNRC, could receive Preliminary Plat approval from the County Commission prior to DNRC determining if water was physically and legally available (issuing a permit).

Depending on the size of the lots in the proposed subdivision and the use of exemptions to applicable rules, the Montana Subdivision and Platting Act, the Montana Sanitation in Subdivisions Act, or both may apply to a proposed subdivision. The Montana Sanitation in Subdivisions Act is administered through the Montana Department of Environmental Quality and the local Environmental Health Services Division of the Health Department. The Montana Subdivision and Platting Act is administered locally through the County Planning Board, Planning Department, and County Commission.

Potential Solution 7-A: Require that an applicant for a subdivision secure a Permit to Appropriate Water from DNRC prior to the Commission granting Preliminary Plat approval.

Pros

- The water resource issues would be discussed and settled up front.
- If DNRC had already made a decision on the water supply the burden on the Commission would be reduced.
- It could reduce the potential for litigation between developers and the County.
- It could help remove politics from the decision making process.
- It could reduce the pressure on the County Planning Department.

Cons

- Developers would have to spend money to obtain a water right without knowing if the Commission will approve the project.
- The length of time required to obtain a water right is so long that it would greatly delay the subdivision application process if they could not be done concurrently.
- The Commission may still be compelled to deny the application based on other issues even if DNRC decides the development is acceptable in terms of water development.
- It could encourage a proliferation of subdivisions with low-yield wells to avoid the need for obtaining water right(s) for high-yield wells.
- It could increase the pressure on DNRC to make decisions.

Potential Solution 7-B: Have the Gallatin County Attorney review a recent opinion of the Montana Attorney General to see if it addresses this issue (Opinions of the Attorney General-49 Op. Att’y Gen. No. 7).

Pros

- As explained to the Task Force, this opinion would require that the water supply be evaluated prior to granting Preliminary Plat approval.
- If applicable, no changes in State statute would be required.

Cons

- The opinion may not apply to this issue.

4.4 Excessive Time Required to Obtain Permits to Appropriate Ground Water (Issue #8)

Issue Statement

The review process for applying for a water-right application is too long.

Issue Background

Task Force members agreed that the time required to file for and obtain a Permit to Appropriate Water for a high-yield well is excessive. Depending on the level of objections the process currently takes from one to two years. If additional testing is required, it can take up to three years. **According to DNRC representatives the primary factors that slow down the review process are limited availability of Hearings Officers, and application processing.** Review of the applications by DNRC Hydrogeologists does not appear to be the primary cause of the delays. Their reviews typically take on the order of several weeks.

Potential Solution 8-A: The Commission should encourage increased staffing for DNRC to for processing water right applications.

Pros

- It would speed up the review process.
- It separates water resource issues from staffing issues.
- It does not require changes in State or local regulations.

Cons

- Increased fees or taxes would be needed to cover staffing and processing costs.
- The County may have limited ability to make it happen.

Potential Solution 8-B: DNRC could allow applicants to submit initial applications with limited available data. DNRC would then notice the application, and hold hearings to determine what the concerns are from opponents. The applicant could then design and conduct the field tests to address all issues raised.

Pros

- It could save time and money for the applicant by letting them know in advance what the issues are and what information will need to be collected.
- It could reduce the chances of the applicant having to conduct more than one round of testing.

Cons

- It would be hard for DNRC and potential objectors to evaluate the application if data was limited.
- It may require changes in State statutes.
- DNRC and objectors could still request additional testing after the data is collected.
- It would probably require at least two hearings per application.

Potential Solution 8-C: The Commission could encourage the reallocation of processing of permit applications internally within DNRC.

Pros

- It might solve the problem locally by relying on DNRC staff in other areas of the state to review applications.
- It could speed up the review process without significant increases in costs to DNRC.

Cons

- The DNRC reviewer may be less knowledgeable of local conditions and issues.
- It may not be enough to substantially reduce the review time.

4.5 Cumulative Impacts of High-Yield Wells (Issue #9)

Issue Statement

Cumulative impacts are not considered by DNRC when wells are permitted.

Issue Background

The Task Force discussed cumulative impacts and the problems with trying to measure them. It was agreed that cumulative impacts, including the cumulative impacts of multiple high-yield wells could not be properly addressed with the limited time the Task Force had to discuss water resource issues.

The amount of information needed to even begin to address this issue would be well beyond the capabilities of a typical applicant to provide. The Task Force did discuss the idea of developing a computer based “numeric ground-water flow model” for the Gallatin Valley, while discussing data needs. In theory this computer model could be used to evaluate cumulative impacts of multiple high-yield wells, but there are also many issues and problems associated with the development and use of ground-water flow models. **The Task Force recognized that this issue is a valid concern, but did not propose any potential solutions due to the complexity of the issue and time limitations.**

4.6 DNRC Requirements for Determining Potential Adverse Impacts (Issue #10)

Issue Statement

The testing data required of DNRC to determine potential adverse impacts (24 to 72 hour pump tests) is not sufficient to determine the effects of long-term pumping and the sustainability of the aquifer.

Issue Background

There are lots of technical questions regarding the aquifer testing methods required for an application for a Permit to Appropriate Water. Most of the Task Force members agreed that even a properly designed 72-hour pumping test does not really show what the long-term effects of pumping a well will be. DNRC has some flexibility to require different types of testing and information to support a permit application. Task Force members discussed some of these issues, and agreed that while there are lots of issues, the current methods used by DNRC to review applications for ground water withdrawals, to assure no adverse impacts to existing water users, is reasonable. **The Task Force did not identify any potential solutions to this but recognized the importance of continuing to evaluate it.**

5.0 ISSUES ASSOCIATED WITH GROUND WATER/SURFACE WATER INTERACTIONS

5.1 General Background Information

It is now commonly accepted that throughout a watershed, ground water and surface water interact within a complex framework established by the local geology and topography. Development of ground-water resources may impact surface-water resources and vice-versa.

Awareness of the importance of recognizing ground water/surface water interactions within the Gallatin Watershed has increased significantly over the last 10 years. In Gallatin County this issue has been raised due to existing and proposed ground-water developments in Big Sky, Gallatin Canyon, the Four Corners area, and along the West and East Gallatin Rivers.

A river or stream that has a water surface that is generally lower than the surrounding water table will receive ground water from the surrounding aquifer and is commonly referred to as a “gaining stream”. A river or stream that has a water surface that is generally higher than the surrounding water table will lose water to the surrounding aquifer and is commonly referred to as a “losing stream”.

When a high-yield well is proposed anywhere near a surface water body, existing water users often have concerns with the potential for the proposed well to adversely impact the surface water body. **If the ground water and surface water in the proposed well area are hydraulically connected, then pumping of ground water may either reduce recharge to the surface water body or induce infiltration of surface water into the ground-water system.**

5.2 Immediate or Direct Connection between Ground Water and Surface Water (Issue #11)

Issue Statement

The DNRC definition of “direct and immediate” connection between surface water and ground water may not be adequate to prevent adverse impacts to surface water from ground water pumping.

Issue Background

This issue is relative to basins in Montana that have been “closed” to new surface water appropriations by State statute. The Gallatin River Basin is part of the Upper Missouri River Closed Basin. In this closed basin new appropriations of ground water can’t be permitted if DNRC determines that there is an “immediate or direct” connection between the ground water and surface water. The State statutes that govern appropriation of ground water in a closed basin do not explicitly define what an immediate or direct connection is. Currently DNRC interprets it to mean that the proposed well will physically capture surface water by inducing streambed infiltration.

This issue deals with water rights and water laws that are complex and beyond the scope of the Task Force. The Task Force did discuss the issue and DNRC representatives provided useful background on the subject. **While the issue statement may be valid, the Task Force did not propose any potential solutions to this issue.**

5.3 Ground Water Development Near Surface Waters in a Closed Basin (Issue #12)

Issue Statement

Ground- water development is being proposed in areas that may result in depletion of surface water flows and are within the area that is designated as a Closed Basin for appropriation of surface water.

Issue Background

This issue is related to issue #11 above and the same background information applies. Because the issue is more specific than issue #11 the Task Force did recommend two potential solutions.

Potential Solution 12-A: Develop a map and technical report to show how and where ground water and surface water interact within the Gallatin Valley. It was suggested that this map should probably be developed as an overlay on a map showing ground-water availability.

Pros

- The information could show aquifer areas where it is important to carefully consider ground water-surface water interactions.
- A review process could be tiered based on which zones of potential interaction a proposed project is located within.
- The information could be useful to many parties, including the Commission, DNRC, developers, and potential objectors to water right applications.
- The information could help reduce the number of objections that are filed against proposed wells.

Cons

- There may not be enough reasonably available information to develop a map of this type. It would require a significant amount of effort to compile if it existed.
- The map and report could end up being too general to solve the problem.
- The map and information could be misinterpreted.
- Property values in areas designated as highly sensitive to ground water-surface water interaction could be negatively impacted.

Potential Solution 12-B: Develop and implement review standards and processes that are tied to identified areas of concern.

Pros

- The review process could be more consistent and predictable.
- If the process was more clearly linked to the pre-identified areas it could reduce the burden and liability on the County Commissioners to make decisions.
- It could provide an opportunity to implement communication early in the process.

Cons

- The Commission may not like the results or may choose to ignore them.
- It may be difficult to identify the areas of concern.

6.0 ISSUES ASSOCIATED WITH FLOODPLAINS

6.1 General Background Information

There has been no significant flooding in Gallatin County since 1997. The combination of prolonged drought and rapid growth within the County makes it easier for residents, developers and elected officials to forget about the dangers posed by flooding.

Gallatin County has been experiencing both rapid growth and drought for more than five years. The last significant flooding event was in 1997. Since then there has been a steady increase in the amount of development near streams and rivers. Associated with this development are concerns for public health and safety when the next flooding event occurs.

The Montana Floodplain and Floodway Management Act (Montana Code Annotated, Title 76, Chapter 5) requires political subdivisions to adopt land use regulations that regulate the use and development of property within the regulated floodways and floodplains. Gallatin County Floodplain Regulations were adopted in 1984 and amended in 1999. Gallatin County is currently considering new amendments to the Gallatin County Floodplain Regulations. The regulations are administered through the Gallatin County Planning Department.

The Task Force discussed floodplain issues several times and reviewed the proposed amendments to the Gallatin County Floodplain Regulations. A common concern was the lack of accurate maps of the areas within floodplains in the County. The Task Force discussed a number of technical reasons for the inaccuracy of floodplain maps. While it is clear that everyone would like to have better information on where floodplains are located, there are a lot of differing views on how floodplains should be managed. **Task Force members did generally agree that the current methods used to map floodplains in Gallatin County are inappropriate.**

6.2 FEMA Methods Used to Map Floodplains in Gallatin County (Issue #13)

Issue Statement

Current floodplain analysis focuses on FEMA standards for single channel systems, which are not appropriate for anabranching (multiple channel) systems such as the lower West Gallatin River.

Issue Background

The Gallatin County Floodplain Regulations are based on flood studies adopted by the Federal Emergency Management Agency (FEMA). The FEMA flood studies include maps showing the delineated floodways and floodplains. It is important to understand that these FEMA floodplain maps were developed to assist FEMA with determining insurance rates for flood insurance. While the maps are a useful tool, they were not created specifically for regulatory use. For regulatory purposes in Gallatin County, the FEMA floodplain maps may not accurately show if a property is within what is defined as the “jurisdictional 100-year floodplain boundary”. The jurisdictional 100-year floodplain boundary is defined as the point where the base-flood-elevation (determined from the flood-profile sheets of the regulatory flood study adopted by FEMA) intersects the natural ground surface.

The lower West Gallatin River consists of several distinct active channels in many areas. This type of river system is referred to as an anabranching river system. In this type of river, channels separate from a main channel and then rejoin the main channel downstream. It is distinguished from a braided river system where there are multiple, shallow, co-mingling channels within the confines of a main channel. The multiple shallow channels are typically separated by low relief sand and gravel bars. **The important characteristic of the anabranching lower West Gallatin River is that the channels are very active and migrate over a wide area.** Aerial photographs of the lower West Gallatin River show this very clearly (see cover photo). The locations of active channels today are probably significantly different in some areas than the locations when the FEMA floodplain studies were completed.

Potential Solution 13-A: Map river corridors based on geomorphology and historical data.

Pros

- It would define flood hazard areas that are more realistic than current methods using hydraulic models.
- It would provide the public with a better source of information about flood hazards.
- The information could be valuable to other agencies.
- It would improve public health and safety.

Cons

- Funding would be needed to complete the studies and mapping efforts. There is a question of who would do the work.
- Translating mapped hazard areas into regulations could be difficult to implement.
- There are potential impacts for economic development.

Potential Solution 13-B: Interact with FEMA to develop a better approach to floodplain regulation and floodplain mapping in anabranching river systems.

Pros

- Could potentially attract national interest and funding to the Gallatin Valley.
- It could also improve public health and safety.

Cons

- It may not be a priority or be of interest to FEMA.
- It would be hard to predict the economic impacts.

6.3 Potential Hazards to Structures Built Above a Floodplain (Issue #14)

Issue Statement

Structures have been, and can be built that are above the mapped floodplains, and that could be in danger due to channel migration.

Issue Background

This issue deals with structures built near high cut banks along a stream or river channel. In these cases a structure may be well above the elevation of the floodplain, but be at risk due to bank erosion during flooding events. The loss of a house along the Yellowstone River in 1997 provides a well-documented case of this type of hazard.

Potential Solution 14-A: Establish minimum setbacks from the mean high water mark.

Pros

- Establishes an increased factor of safety and more protection of structures.
- It would reduce the need for bank stabilization measures to protect structures.
- Local/regional polling indicates the public views minimum setbacks positively.
- It could improve protection of rivers, which are important to economic development.

Cons

- Setback distances can be subjective and hard to reach agreement on.
- On small tracks of land, setbacks could preclude building anywhere on the site.

Potential Solution 14-B: Use River Corridor maps based on geomorphology and historical information as regulatory maps for locating structures. Note this solution is related to potential solution 13-A above.

Pros

- It would improve protection of structures.

Cons

- There would be costs associated with development of new regulations.

6.4 FEMA Funding for Floodplain Mapping in Montana (Issue #15)

Issue Statement

Montana is at the bottom of FEMA's funding list for map updates and changes.

Issue Background

The Task Force discussed the idea of seeking funding from FEMA to update local flood studies. If this work was completed and FEMA considered the unique nature of the anabranching lower West Gallatin River, the new maps would probably improve public health and safety. It was concluded that FEMA was unlikely to change their funding priorities due to the low population of Montana relative to other areas of the Nation that have high populations and high flood hazards. **While the Task Force encourages pursuing funding for updated flood studies, no specific solutions were proposed.**

6.5 Complexity of Floodplain Regulations (Issue #16)

Issue Statement

Floodplain regulations are complex and difficult to understand.

Issue Background

The Task Force did not address this issue.

6.6 Lack of Protection of Riparian Vegetation in Floodplains (Issue #17)

Issue Statement

Currently there is no protection for riparian vegetation, which provides important benefits, including flood storage, improved water quality, wildlife habitat, and bank stabilization.

Issue Background

Woody riparian vegetation (shrubs and trees), and native riparian grasses help to stabilize banks along rivers and streams. Riparian vegetation also provides a number of other important benefits such as reducing flood damage, providing wildlife habitat, wildlife transportation corridors, and reducing stormwater runoff directly into rivers and streams. While all of these benefits are well accepted by the scientific community, there is currently very little regulatory protection.

Property owners could view regulations designed to protect riparian vegetation as an infringement of private property rights. However, clearing of vegetation can result in increased bank erosion (water pollution) and increased flood damage to property owners downstream.

Potential Solution 17-A: Establish reasonable riparian clearing practices that include minimum buffer zones.

Pros

- Would improve protection of riparian ecosystems.
- Would reduce sediment load to surface waters from stormwater runoff and bank erosion.
- There could be economic benefits to the community.

Cons

- It would be controversial to the public.
- There would be costs and staff time required to enforce regulations.

6.7 Building Structures and Filling within the 100-Year Floodplain (Issue #18)

Issue Statement

Building and filling within the 100-year floodplain causes a variety of public health and safety concerns.

Issue Background

As with the protection of riparian vegetation discussed above, it is well accepted within the scientific community that human modifications within the floodplain, including building of structures and placement of fill materials, changes flood flows. **Floodplain regulations designed to reduce public health and safety risks can also be viewed as infringing on private property rights. The actions of one property owner, such as placing fill in the floodplain, can however cause damage to property owners downstream by altering flood elevations or flood flows.**

Potential Solution 18-A: Do not allow residential, commercial, and industrial structures within the 100-year floodplain.

Pros

- This would address a number of floodplain issues.
- It would reduce flood damage and ultimately save money.
- It would allow the rivers to function naturally.
- There could be costs savings to the public and property owners.

Cons

- The regulations could conflict with City of Bozeman regulations that already exist.
- It could inhibit economic development at some level.

Potential Solution 18-B: Only allow building in floodplain if dry access is available from natural ground outside the 100-year floodplain (no fill allowed).

Pros

- Could allow some discretion for building within the 100-year floodplain.
- Would eliminate building on “islands” within the 100-year floodplain.
- Would provide for emergency response access during floods.

Cons

- Could be a burden to economic development.

7.0 ISSUES ASSOCIATED WITH IRRIGATION DITCHES

7.1 General Background Information

The Gallatin Valley has a rich agricultural based history. As the population of the Gallatin Valley grows, agricultural land uses are being displaced by urban and suburban land uses.

As land use changes occur in the Gallatin Valley there is more and more mingling of agricultural land uses with urban and suburban land uses. Many of the conflicts that occur are associated with the complex system of irrigation ditches and canals that have historically provided irrigation water to large areas of the valley. The Task Force spent a significant amount of time discussing these conflicts.

7.2 Access to Ditches for Repair and Maintenance (Issue #19)

Issue Statement

Ditch easements and subdivision covenants related to ditches are not enforced.

Issue Background

The authority to enforce easements lies with the easement holder, which in many cases is a ditch company. The County would not have the authority to enforce an easement unless it held the easement. **Covenants governing homeowners within a subdivision must be enforced by a homeowners association, or through civil litigation between homeowners. Ditch owners can't enforce subdivision covenants.**

The Task Force discussed creation of an association of irrigators as a means of coordinating activities between various ditch companies. The idea of an irrigation district was also discussed, but it was agreed that irrigation districts are usually focused on management of a specific irrigation project and are not suitable for dealing with multiple ditches and ditch companies. **There was agreement that education was an important tool to use to resolve many of the ditch issues.** Many homeowners simply are not aware of the conditions associated with easements and covenants. **Homeowners also perceive many of the ditches that flow through their property as streams.**

Potential Solution 19-A: Develop an education program to inform homeowners about ditch easements, associated covenants, operation of ditches, and public safety.

Pros

- Education efforts do not require any regulatory action to implement.
- Education should reduce conflicts.

Cons

- Someone would have to be responsible for providing the education.
- Education efforts would require staff time and money to conduct.
- The education would have to be on-going to be effective.

Potential Solution 19-B: An irrigators association or water users association could be created to improve communication and cooperation between the various irrigators and ditch companies. The structure proposed would be an association governed by a board of directors. The board would be composed of irrigators and ditch company representatives. Irrigators and ditch companies would look to the District Court and the Montana Water Court for assistance in creating the association.

Pros

- The association could provide a structure for unified enforcement of easements.
- The association could lobby as a group on legislative issues.
- The association could comment as a group on subdivisions, water right applications, and other issues.
- The association could be a clearinghouse for public education information.
- The Board could serve as a mediator between the member irrigators and ditch companies for problems that arise.
- The Board could hire a staff person to manage the association.

Cons

- It would require substantial effort to form an effective association.
- Some source of funding would be required if the Board hired any paid staff.
- Personality conflicts between participants could reduce the effectiveness of the association.
- It is likely that some ditch owners would not want to participate in the association.

7.3 Recording of Ditch Easements on Plat Maps (Issue #20)

Issue Statement

Easements are not always recorded on plat maps. This makes it hard for property owners to know there is an easement filed on their property.

Issue Background

Irrigation ditch easements are typically shown on newer plat maps, but many old plat maps do not show the easements. Additionally, some easements that are recorded do not specify a distance from the centerline of an irrigation ditch for the easement. Without a specified width for the easement the location of the easement can't be drawn on a plat map. Irrigation ditch easement dimensions are not standard and some easements simply specify "adequate distance" from the ditch centerline. **In general, the platting process needs to be modified to assure that irrigation ditch easements are always drawn on the plat maps filed with the Gallatin County Clerk and Recorders Office. This would require that irrigation ditch easements always have legally defined boundaries.** Because irrigation ditches vary in size, and the terrain along a ditch sometimes limits equipment access on one side or the other, the width of the designated easements would need to be flexible.

Potential Solution 20-A: Modify plat-recording procedures to assure that all new ditch easements are recorded on the property deed, and plotted on the plat maps.

Pros

- It would eliminate confusion associated with new easements that are filed.
- Property owners are more likely to notice the easement if shown on a plat map.

Cons

- It would not deal with existing easements filed with the County.

Potential Solution 20-B: Set a County-wide standard for easement width in a fashion similar to utility easement standards, with flexibility to allow for modifications, and a variance procedure. The Gallatin Conservation District could be asked to assist with determining what the “standard” width of a ditch easement should be. The Planning Department could assist by developing a variance procedure for non-standard easements.

Pros

- Having a standard easement would make it easier for property owners and others to determine where the easement is.
- The requirement would eliminate filing of easements without specified boundaries.

Cons

- The Gallatin Conservation District would have to spend time to assist in determining what a reasonable standard should be.
- The Planning Department would have to spend time and money dealing with variance requests.

7.4 Consideration of Ditches During Subdivision and Structures Near Ditches (Issue #21)

Issue Statement

Plat design (subdivision) often does not consider the location of existing irrigation ditches from the standpoint of ditch maintenance requirements. Structures (buildings, bridges, fences) within easements hamper access for maintenance by ditch owners.

Issue Background

The Task Force discussed two problems related to consideration of existing irrigation ditches when land parcels are subdivided for residential and commercial development. The first problem noted was creation of lots that are split by ditches. This type of lot layout encourages the lot owner to build bridges or place culvert crossings in the ditch to allow access to each portion of the lot. If the lots are designed so that none of them are split by irrigation ditches the need to install crossing structures would be reduced. The second problem discussed was the construction of structures near, or across irrigation ditches in subdivisions. **Landscaping, fences, bridges, and culvert crossings all hamper the ability of irrigation ditch operators, who have a legal easement, to access the ditches for repair and maintenance.**

Potential Solution 21-A: The Commission and Planning Department could establish policies to review lot layouts with standards to minimize the number of crossing (bridges) required and minimize fencing requirements.

Pros

- Modification of lots would significantly reduce conflicts.
- The need for crossing structures would be reduced.
- The review process would probably increase awareness of the ditch easement.

Cons

- New review policies would need to be developed, increasing the review process.
- There would be increased costs for County staff review.

Potential Solution 21-B: The land developer could be required to consult with the ditch owner/operator prior to submitting a subdivision proposal for the first minor subdivision. A letter would be required from the ditch owner/operator along with the subdivision application. Related to this solution, accurate ditch maps, and updated ownership lists need to be made available to developers. The Gallatin Conservation District is working on a GIS ditch map but it is not complete. A list of ditch owners is available from the Montana Water Court. A hardship clause would need to be included in the requirement in case a ditch owner refuses or fails to respond.

Pros

- It should help reduce conflicts between property owners and ditch owners/operators.
- The ditch owner/operator would get notification of the proposed subdivision and be given the opportunity to review it.

Cons

- It could be hard for a developer to determine who owns or operates a ditch.
- There could be cases where one or the other of the parties is unwilling to cooperate.
- If a letter was required from the ditch operator, they could simply not respond to stop the development.
- Procedures would need to be developed to assure that ditch maps and ownership lists are accurate and current.

Potential Solution 21-C: Require a Pre-Application review of all major and first minor subdivisions by the Planning Department. This solution would include modifying the pre-application checklist to specifically address ditch issues.

Pros

- The process would alleviate problems and reduce costs for correcting the problems later.
- It would provide an opportunity for education during the review process.
- There could be a cost savings in the long run for a developer.

Cons

- It would only address ditch issues resulting from major and first minor subdivisions.
- It would require a developer to go through the Pre-application process, which is currently optional.
- There would be additional process time and costs for developers that would normally not use the process.
- If more pre-applications were submitted, more staff time would be required.

7.5 Potential Water Quality Problems Associated with Ditches (Issue #22)

Issue Statement

Activities associated with development along irrigation ditches may degrade water quality in the ditch.

Issue Background

As subdivisions are built around irrigation ditches, the potential to impact water quality is increased. On larger suburban and rural lots property owners may allow livestock to access the ditch. Stormwater runoff may flush pollutants into the irrigation ditch. These pollutants can include fertilizer compounds, herbicides, pesticides, and animal waste. If the ditch discharges to a river or stream, the ditch operator may be held responsible for the contaminants being discharged under the Total Maximum Daily Load (TMDL) program.

Potential Solution 22-A: Conduct research to determine the extent of this problem. Visual observations, complaints, and a few specific problems have been noted, but ditch-water quality has never been evaluated within the County. The water quality in ditches that provide return flow back to surface water bodies is more of a concern than water quality in ditches that dead-end.

Pros

- Assessing water quality in ditches would provide the basis for determining the magnitude of the problem.
- Documenting water quality in ditches that discharge back to surface-water bodies could be used to aid in TMDL assessments of local rivers and streams.

Cons

- Funding would be required to collect water quality samples and assess the ditches to determine the extent of the problem.
- If problems are found, additional work may be required to identify the cause(s).

8.0 DATA NEEDS

Throughout the Task Force meetings the need for better water resource information was discussed. A list of identified “data needs” was developed by the Task Force. Towards the end of the Task Force meetings the members ranked and prioritized the identified data needs. The results of this priority ranking are shown below. The order of ranking within each category is random.

8.1 High Priority Data Needs

- ❑ A ground-water monitoring well network is needed to monitor water levels and ground-water quality.
- ❑ A surface-water monitoring network is needed to monitor flows and surface-water quality.
- ❑ A better understanding of where, when, and how ground water and surface water interact in the Gallatin Valley Aquifer system is needed.

8.2 Medium Priority Data Needs

- ❑ An accurate GIS database of private and public wells is needed.
- ❑ A ground-water flow model (a computer simulation model) should be developed to aid in understanding ground water and surface water interactions and provide a valley wide tool for evaluating potential impacts from water developments.
- ❑ An accurate GIS database of potential sources of water pollution is needed for things such as individual and community sewer systems, fuel storage sites, chemical storage sites etc.

8.3 Lower Priority Data Needs

- ❑ A better understanding of the impacts of changing land uses and loss of irrigated lands on ground-water levels, surface water flows, and wetlands is needed.
- ❑ We need to know how much aquifer recharge occurs
- ❑ We need to know how much ground-water and surface-water is being used.

9.0 PUBLIC OUTREACH AND EDUCATION

9.1 Outreach Materials

The Task Force was not specifically charged with conducting public education and outreach efforts. However, education was a recurrent theme in the discussions, and many of the proposed solutions included education activities. In addition to drafting this report and presenting the report to the Gallatin County Commission, the Task Force developed a number of resources to inform the public about the Task Force and about water resource issues in general. A power point presentation was developed so that Task Force members could present the results of the Task Force. This presentation is available to interested groups on request. A website was also established to provide the public with an overview of the Task Force activities, and to make the final report readily available to the public. The website can be viewed at <http://www.gallatinwatertaskforce.net>. Finally, a poster display and accompanying booklet was also developed to provide the same overview of the Task Force activities.

9.2 Advocacy

The Task Force will not engage in any advocacy activities as a group. Each member of the Task Force represents a different entity or interest group in the community. Each member may choose to advocate for or against the implementation of Task Force proposed solutions. At the time of this writing, several Task Force members have been active in forming an irrigation association that is now active and is known as the Gallatin Association of Agricultural Irrigators (AGAI). The Task Force itself does not advocate for the implementation of any proposed solutions with this report.

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 Conclusions

One of the successes of the Task Force was the interaction of the members that served on the Task Force. The composition of the Task Force included water users, a developer, water resource professionals, representatives of environmental organizations, and regulatory agency staff. While viewpoints on many of the issues differed, it was apparent that in many cases some

of the differences were due to lack of understanding. Task Force members educated each other on each of the issues. Through this process there was general consensus on the issue statements that were developed and many of the potential solutions.

Overall there was very little controversy over the issues associated with irrigation ditches, with members from all backgrounds agreeing on most issues and potential solutions. The Task Force was not in full agreement on solutions to the floodplain issues.

The number and complexity of the issues associated with low-yield and high-yield wells resulted in the Task Force spending most of its time working through these issues. This is probably due to the fact that the well issues are associated with so many aspects of water resources. The well issues lead the Task Force members into discussions about two important issues that the group did not have time to address. These two issues were Carrying Capacity and Cumulative Impacts.

10.2 Follow-Up on Other Water Resource Issues

The Task Force discussed the concepts of Carrying Capacity and Cumulative Impacts. No specific recommendations were made due to the complex nature of these concepts and the lack of information available to quantify them. There was general consensus that sources of water pollution, including stormwater runoff from urban and suburban developments, effluent from septic tanks, and the potential for improper use and disposal of chemicals are all increasing. The question remains-can these impacts be measured and quantified?

The Task Force did discuss concerns related to the significant increase in ponds in Gallatin County. At the time of these discussions it was learned that the Montana Environmental Quality Council was looking into the issues associated with ponds on a statewide basis. For this reason the Task Force chose not to deal with pond issues.

10.3 Gallatin County Commission Action

The Task Force agreed early on not to suggest specific solutions to each of the issues discussed. It was felt that giving the Commission a number of different potential solutions to each issue, along with some of the pros and cons of each potential solution would be more useful. This approach should be viewed as providing a starting point for addressing the issues the Commission feels are important. In all cases there may be other potential solutions, and pros and cons that the Task Force did not consider. The Task Force recommends that the Commission review the issues and prioritize the ones that are most important. Once this is done the Commission can work towards solutions to the issues.

In most cases the need for better water resource information is needed. The data needs identified by the Task Force would go a long way towards assisting with decisions regarding the many water resource issues presented. The Task Force recommends follow-up on these data needs.

The only specific recommendation that the Task Force agreed on was the idea of creating some type of technical advisory council to assist the Commission and others with water resource issues. Although this concept is listed in the report to deal with a specific issue, this technical advisory council could help resolve any potential issues.